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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,331	02/18/2004	Yasuji Takenaka	245402008400	5400

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EXAMINER

FARAHANI, DANA

ART UNIT	PAPER NUMBER
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2891

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/782,331		TAKENAKA, YASUJI	
	Examiner		Art Unit	
	Dana Farahani		2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-16, 18, 19 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-2, 8, 12, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Abe (US Patent 5,177,593), newly cited.

Regarding claims 1 and 8, Abe discloses in figure 4B, a semiconductor light-emitting device, comprising:

a lead frame 32/37 having a main surface, in which a first region and a second region extending along the periphery of the first region are defined;

a semiconductor light-emitting element 33 provided at the first region;

a first resin member 35 having a first reflectivity with respect to light emitted from the semiconductor light-emitting element and provided at the first region to completely cover the semiconductor light-emitting element; and

a second resin member, 31, having a second reflectivity greater than the first reflectivity with respect to the light emitted from the semiconductor light-emitting element and provided at the second region to surround the semiconductor light-element; wherein

the first resin member includes a first top surface,

the second resin member includes a second top surface that is provided at a position where a distance from the main surface is greater than a distance from the main surface to the first top surface, and an inner wall that is provided on a side where the semiconductor light-emitting element is located and extends in a direction away from the main surface to reach the second top surface, as can be seen in the figure;

the inner wall provides a reflecting surface for the emitted light at a position where the distance from the main surface is greater than the distance from the main surface to the top surface.

Regarding claim 2, a metallic wire 36 having one end connected to the semiconductor light-emitting element and another end connected to the main surface, and the first resin member is provided to completely cover the metallic wire.

Regarding claims 12 and 13, the second resin member is formed such that an area of a shape defined by the inner wall in a plane parallel to the main surface increases with an increase of a distance from the main surface.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe as applied to claim 1 above, and further in view of Murano (US Patent 6,707,247), previously cited

Abe discloses the claimed invention, as discussed above, except for the ball shaped and line shaped wire bonds described in those claims.

Murano discloses these limitations, as discussed in the Office Action mailed on 11/29/05. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the wire bonds in such configuration to insure good connection to the lead.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe.

Abe discloses the claimed invention, as discussed above, except for the metal having a heat conductivity of not lower than 300 W/mK and not greater than 400 W/mK. It would have been obvious to one of ordinary skill in the art at the time of the invention to select the proper material for the wires with a specific heat conductivity to use the light emitting element in an specific environment. See *In re Leshin*, 125 USPQ for the proposition that it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe as applied to claim 1 above, and further in view of Ishinaga (US Patent 6,180,962), previously cited.

Abe discloses the claimed limitations in the claim, discussed above, but does not disclose the lead frame includes terminal portions separated by a slit-shaped groove, and the portions are formed thinner than the other portions of the lead frame.

Ishinaga (US patent '962) discloses in figure 1, a lead frame 4, 4a and 4b has portions 4 (two portions 4 separated by portion 10) separated by a slit-shaped groove 10, the portions are formed thinner than the other portions (4a and 4b) of the lead frame. Ishinaga further discloses that this shape configuration prevents damage to the light emitting device (see col. 4, lines 6-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include such lead frame configuration in the Abe reference in order to benefit from the damage preventing properties of this lead frame shape configuration.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe as applied to claim 8 above, and further in view of Waitl et al., hereinafter Waitl (US Patent 6,624,491), previously cited.

Abe discloses the claimed invention, as discussed above, but does not disclose the lead frame includes a first depression that is formed at an opposite surface with respect to the main surface and filled with a resin, and terminal portions to be electrically connected to a mounting board are provided on the opposite surface, on respective sides of the first depression.

Waitl discloses in figure 3, the lead frame 5 includes a first depression that is formed at an opposite surface with respect to the main surface, and terminal portions to be electrically connected to a mounting board are provided on the opposite surface, on respective sides of the first depression. Waitl further discloses that with this shape

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configuration liberties can be taken for complex circuit designs for LEDs (see col. 3, lines 58-67; and col. 4, lines 1 and 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the lead frame of the Abe reference with this shape configuration to benefit from the properties associated with it, as discussed in the Waitl reference, and as mentioned above.

8. Claims 10 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe as applied to claim 1 above, and further in view of Wang et al., hereinafter Wang (US Patent Application Publication 2003/0178691), previously cited.

Regarding claim 10, Abe discloses the claimed invention, as discussed above, but does not disclose the lead frame has a depression formed at the first region, and the semiconductor light-emitting element is provided in the depression.

Wang discloses in figure 2, a light emitting element 10 is formed in a depression (that is a depression with respect to protrusion shown at the side of the light emitting element). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the light emitting element of the Abe reference in such configuration to make it more secure, by the fact that resin would be present inside depression 17, hence making it more secure.

Regarding claims 14-16, the lead frame in Wang (fig. 7) includes a lead terminal 31 projecting from the periphery of a main (top) surface and extending in a prescribed direction, and the lead terminal has a tip end portion, at 37, having an end surface formed at a tip end extending in the prescribed direction, and a base portion located between the periphery of the main surface and the tip end portion, and the lead terminal is formed

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such that an area of the end surface is smaller than a cross sectional area of the base portion in a plane parallel to the end surface.

9. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe as applied to claim 1 above, and further in view of Nakagawa et al., hereinafter Nakagawa (US Patent 6,393,22), previously cited.

Abe discloses the claimed invention, as discussed above, but does not disclose an electronic image pickup device.

Nakagawa discloses an electronic image pickup device, which uses a light emitting device (see col. 8, lines 37-43). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the light emitting device of the Abe reference, since it is well known that light emitting devices are normally used in image pickup devices. Note that the limitation that of: wherein when a reference plane of a rectangular shape is provided at a prescribed distance from said semiconductor light-emitting device, luminance at each corner of said reference plane irradiated with the light from said semiconductor light-emitting device is not less than 50% of luminance at the center of said reference plane is a functional limitation, and since Ishinaga discloses the claimed structure, it discloses this functional limitation as well.

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe as applied to claim 1 above, and further in view of Ishinaga (US Patent Application Publication 2002/0134988), previously cited.

Abe discloses the claimed invention, as discussed above, except for the inner wall is plated.

Ishinaga discloses this limitation, as discussed in the office action mailed on 10-2-06. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to plate the inner wall in order to increase the reflectivity therefrom.

Response to Arguments

11. Applicant's arguments with respect to the previous rejection have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

12. Claims 20-21 are allowed.

13. The following is an examiner's statement of reasons for allowance:

The reason for allowance of claims 20-21 is the inclusion therein of the limitations that of the three lead frames extending in different directions from each other, along with the other limitations in those claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571)272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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